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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte REIYAO ZHU

Appeal 2009-001958
Application 10/803,384
Technology Center 1700

Decided: August 10, 2009

Before BEVERLY A. FRANKLIN, LINDA M. GAUDETTE, and
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

FRANKLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1, 3-11, and 13-19. We have jurisdiction under 35 U.S.C. § 6(b).

STATEMENT OF THE CASE

Claims 1, 11, and 19 are representative of the subject matter on appeal and are set forth below:

1. A yarn suitable to provide arc and flame protection comprising:
 - (a) 45 to 60 weight percent modacrylic fiber,
 - (b) 15 to 35 weight percent cotton fiber and
 - (c) 5 to 30 weight percent aramid fiber,

said percentages on the basis of components (a), (b) and (c).
11. A fabric suitable to provide an arc and thermal protection comprising:
 - (a) 45 to 60 weight percent modacrylic fiber,
 - (b) 15 to 35 weight percent cotton fiber and
 - (c) 5 to 30 weight percent aramid fiber,

said percentages on the basis of components (a), (b) and (c).
19. A garment suitable to provide arc and thermal protection:
 - (a) 45 to 60 weight percent modacrylic fiber,
 - (b) 15 to 35 weight percent cotton fiber and
 - (c) 5 to 30 weight percent aramid fiber,

said percentages on the basis of components (a) (b) and (c).

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Nelson	4,025,491	May 24, 1977
Smith (hereafter Smith '906)	4,865,906	Sep. 12, 1989
Smith (hereafter Smith '111)	4,970,111	Nov. 13, 1990

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Gadoury	5,824,614	Oct. 20, 1998
Campbell	6,787,228 B2	Sep. 07, 2004

SUMMARY OF THE DECISION

We affirm.

THE REJECTIONS

1. Claims 1, 11, 13, 14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell in view Nelson.
2. Claims 3-5 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell in view of Nelson as applied to claims 1, 11, 13, 14, and 19 above, and further in view Smith '906.
3. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell in view of Nelson in view of Smith '906 as applied to claims 3-5 and 15-17 above, and further in view of Gadoury.
4. Claims 9, 10, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell in view Nelson as applied to claims 1, 11, 13, 14, and 19 above, and further in view of Gadoury.

The Examiner has withdrawn the last 2 rejections listed on page 3 of the Brief. Ans. 2-3.

ISSUE

Has Appellant shown that the Examiner reversibly erred in rejecting the claims by successfully rebutting the Examiner's prima facie case by convincingly arguing that the applied art teaches away from a yarn

comprising (a) 45 to 60 weight percent modacrylic fiber, (b) 15 to 35 weight percent cotton fiber and (c) 5 to 30 weight percent aramid fiber?

FINDINGS OF FACT

The Examiner finds that Campbell discloses yarn comprising at least about 70 weight percent modacrylic fibers and at least about 3 weight percent aramid fibers. Campbell, col. 4, ll. 9-56; Ans. 4.

Campbell teaches that the amount of modacrylic fibers and aramid fibers achieve recognized results. Campbell, col. 3, ll. 17-41.

Nelson teaches that cotton fibers achieve recognized results such as providing a textile with certain aesthetic properties. Nelson, col. 1, ll. 62-66; col. 4, l. 61- col. 5, l. 2.

PRINCIPLES OF LAW

A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 620 (CCPA 1977); *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980) (“[D]iscovery of an optimum value of a result effective variable . . . is ordinarily within the skill of the art.”); *see also In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003) (“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.”).

Once an Examiner establishes a prima facie case of obviousness, the burden of going forward shifts to the Applicant. *In re Dillon*, 919 F.2d 688, 694 (Fed. Cir. 1990). A prima facie case of obviousness may be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471 (Fed. Cir. 1997). Applicant can rebut a presumption of obviousness based on a claimed invention that falls within a prior art range by showing “(1) [t]hat the prior art taught away from the claimed invention, . . . or (2) that there are new and unexpected results relative to the prior art.” *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322 (Fed. Cir. 2004).

ANALYSIS

As a preliminary matter, we confine our discussion to independent claims 1, 11, and 19, which contain limitations representative of the arguments made by Appellant pursuant to 37 C.F.R. §41.37(c)(1)(vii). As such, we need only address the references of Campbell and Nelson (the dependent claims stand or fall with the independent claims and references applied against these dependent claims need not be addressed in making our determination herein based upon Appellant’s arguments).

The Examiner finds that Campbell discloses yarn comprising at least about 70 weight percent modacrylic fibers¹ and at least about 3 weight

¹ On page 8 of the Answer, the Examiner alters this finding by calculating that Campbell teaches 42% to 97% by weight modacrylic fibers. Appellant argues that there is no teaching in Campbell to support this position made by the Examiner. We agree with Appellant that Campbell discloses a fabric comprising at least about 70% modacrylic fibers, wherein the modacrylic

percent aramid fibers. Campbell, col. 4, ll. 9-56; Ans. 4. The Examiner states that “about 70% is considered to read on 60%”.² Ans. 4.

The Examiner alternatively states that if it is shown that about 70% does not read on 60%, the amount of modacrylic fibers, aramid fibers, and cotton fibers are result effective variables and therefore obvious design expedients.³ Ans. 4-5.

Because Appellant does not specifically address the Examiner’s statement that “about 70% is considered to read on 60%”, and in view of the Examiner’s supported position, discussed *supra*, that the amount of modacrylic fiber, aramid fibers, and cotton fibers are obvious design expedients, we support the Examiner’s *prima facie* case of obviousness.

fibers contain at least about 50% acrylonitrile. We refer to Appellant’s logic as set forth on page 3 of the Reply Brief in support thereof.

² Appellants do not directly address this statement made by the Examiner. Rather, Appellant focuses on a “teaching away” position.

³ The Examiner points out that Campbell teaches that modacrylic fibers are present for flame resistance (col. 3, ll. 18-23), and aramid fibers are present for tensile strength (col. 3, ll. 25-40). The Examiner also finds that Nelson teaches that it is known in the flame resistant fabric art to blend synthetic fibers with cotton in an amount from 15 to 65 weight percent, to provide the fabric with the desired aesthetic hand properties, moisture absorption properties, and to minimize static electricity. Ans. 4-5. Hence, the cited art does recognize that amounts of modacrylic fibers, aramid fibers and cotton fibers achieve a recognized result. As such, we agree with the Examiner that determination of the optimum or workable ranges of these variables can be characterized as routine experimentation. *In re Antonie*, 559 F.2d at 620 ; *In re Boesch*, 617 F.2d at 276; *In re Peterson*, 315 F.3d at 1330.

A *prima facie* case of obviousness may be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. *In re Geisler*, 116 F.3d at 1471. Applicant can rebut a presumption of obviousness based on a claimed invention that falls within a prior art range by showing “(1) [t]hat the prior art taught away from the claimed invention, . . . or (2) that there are new and unexpected results relative to the prior art.” *Iron Grip Barbell Co., Inc.*, 392 F.3d at 1322.

On page 5 of the Brief, Appellant states that he has accepted a burden of proof which is that one of ordinary skill in the art would not employ 60% acrylonitrile fibers from the teaching of Campbell of “about 70%”. On page 6 of the Brief, Appellant explains that he does not need to show “unexpected results” to rebut a *prima facie* case. We understand these statements to mean that Appellant has chosen to rebut the *prima facie* case by arguing that the applied art teaches away from his claimed invention, and has chosen not to provide a showing of unexpected results, which is an acceptable approach. *Id.*

On page 4 of the Brief, Appellant argues that Campbell teaches a lower limit of “about 70%” for the amount of modacrylic fiber. Appellant argues that one skilled in the art would not employ Appellant’s claimed amount of 60% modacrylic fibers in view of this teaching of a lower limit of “about 70%” as taught by Campbell. Br. 5. In other words, Appellant argues that Campbell teaches away from the claimed amount of modacrylic fibers of from “45% to 60%”. Appellant discusses various excerpts from Campbell in support of a teaching of a lower limit of “about 70%”, and we refer to Appellant’s discussion in his Brief in this regard. Br. 6-7. Appellant argues that one of ordinary skill in the art “[w]ould not pursue a route to

obtain less and less acceptable results”, yet the Examiner’s position is predicated on lowering the acrylonitrile content to an amount below the teachings of Campbell. Br. 7.

Appellant also argues that Campbell’s invention must meet certain standards (specified in Campbell) for flame resistance and arc thermal performance exposure, yet the Examiner’s rejection proposes changing the amount of acrylonitrile and adding cotton fibers to the product of Campbell. Br. 7-8.

In response to the above-mentioned arguments, the Examiner states:

[T]he applied prior art clearly discloses that there are benefits to be derived from reducing the weight percent of modacrylic fibers. A reduced weight percent of modacrylic fibers, and thus an increase in the weight percent of aramid fibers and/or cotton fibers, would result in higher strength, higher energy absorption, improved aesthetic hand properties, improved moisture absorption properties, and/or minimal static electricity. Campbell falls far short of the kind of teaching that would discourage one of ordinary skill in the art from fabricating a yarn comprising 60 weight percent modacrylic fibers.

Ans. 9-10.

Hence, on the one hand, Campbell’s invention is directed to a fabric designed to meet certain standards (described in column 2, line 9 through column 3, line 9), and that at least about 70% modacrylic fibers and at least about 3% aramid fibers are required in order to meet these standards (col. 4, ll. 57-65).

On the other hand, Campbell teaches that the amount of modacrylic fibers and aramid fibers achieve recognized results (e.g., col. 3, ll. 17-41). Nelson teaches that cotton fibers achieve recognized results such as providing a textile with certain aesthetic properties. Nelson, col. 1, ll. 62-66; col. 4, l. 61- col. 5, l. 2.

In view of the above, we agree with the Examiner's response, discussed supra, because one skilled in the art would not be dissuaded from selecting an amount of modacrylic fibers below "about 70%", when recognizing the results to be obtained from doing so, as taught by Campbell. Although Campbell's fabric must meet certain standards as argued by Appellant, Campbell's teachings are broader than the particular application because Campbell teaches that there are recognized results associated with the use of acrylonitrile fibers and aramid fibers, as pointed out by the Examiner. As such, we agree with the Examiner's reference to *In re Geisler*, 116 F.3d at 1471. Ans. 10.

With respect to the reference of Nelson, on pages 7-9, Appellant argues that the Examiner's position ignores a "direct disclosure of Nelson" regarding its purpose of adding a high concentration of fire retardants. Appellant argues that therefore one would not turn to the teachings of Nelson (directed to adding fire retardants to polyester) for a teaching of adding cotton to the product of Campbell. Br. 9.

We agree with the Examiner's response made on page 11 of the Answer. In other words, Nelson teaches that cotton fibers achieve recognized results. Nelson, col. 1, ll. 62-66; col. 4, l. 61 - col. 5, l. 2. Appellant has not convinced us that these recognized results are known only to occur when cotton fibers are blended with polyesters having very high concentration of flame retardants.

In view of the above, we affirm each of the rejections.

CONCLUSIONS OF LAW

Appellant has not shown that the Examiner reversibly erred in rejecting the claims because Appellant did not successfully rebut the

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Examiner's prima facie case and because Appellant did not convincingly argue that the applied art teaches away from a yarn comprising (a) 45 to 60 weight percent modacrylic fiber, (b) 15 to 35 weight percent cotton fiber and (c) 5 to 30 weight percent aramid fiber.

DECISION

Each of the rejections is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(v)(2008).

AFFIRMED

Ssl

E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
BARLEY MILL PLAZA 25/1122B
4417 LANCASTER PIKE
WILMINGTON, DE 19805